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3-22-01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
PATENT APPLICATION

#3

In the Application of:

Guven et al.

Atty. Docket: TI-32148

Serial No.: 09/750,264

Art Unit: TBD

Filed: December 29, 2000

Examiner: TBD

For: MODEM RELAY PROTOCOL  
REDUNDANCY FOR RELIABLE  
LOW SPEED MODEM  
COMMUNICATIONS OVER IP  
NETWORKS WITH SUBSTANTIAL  
PACKET LOSS

Date: April 16, 2001

Assistant Commissioner for  
Patents  
Washington, D.C. 20231

**CERTIFICATE OF MAILING 37 CFR §1.8(a)**

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D. C. 20231 on the date indicated below.

4/16/01  
  
Warren L. Franz, Reg. No. 28,716

**LETTER TO THE OFFICIAL DRAFTSPERSON**

Sir:

Please find enclosed eight (8) sheets of substitute/formal drawings for the subject application as required by the Notice to File Corrected Application Papers mailed February 15, 2001, a copy of which is also enclosed.

Respectfully submitted,

Warren L. Franz 4/16/01  
Attorney for Applicant(s)  
Reg. No. 28,716

Texas Instruments Incorporated  
P. O. Box 655474, M/S 3999  
Dallas, Texas 75265  
(972) 917-5271

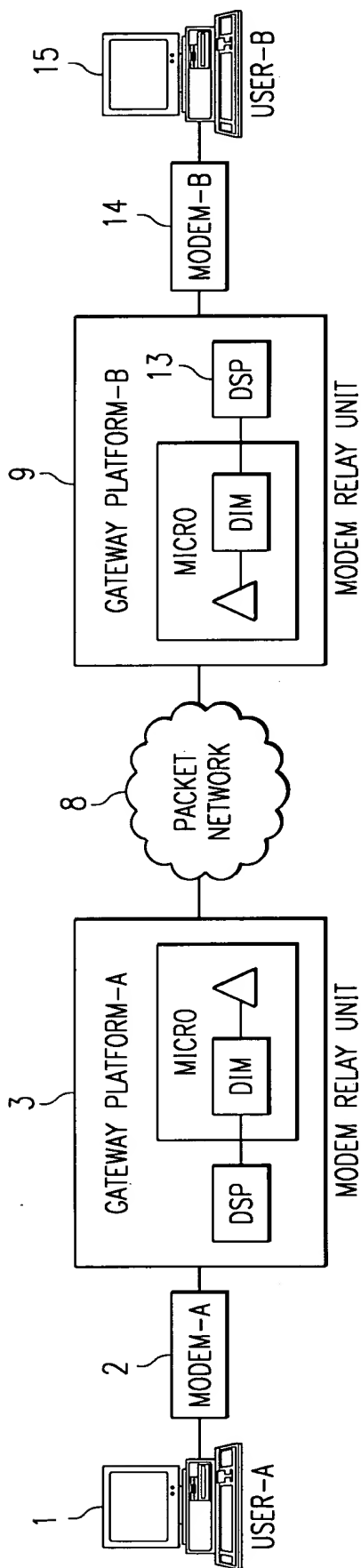


FIG. 1

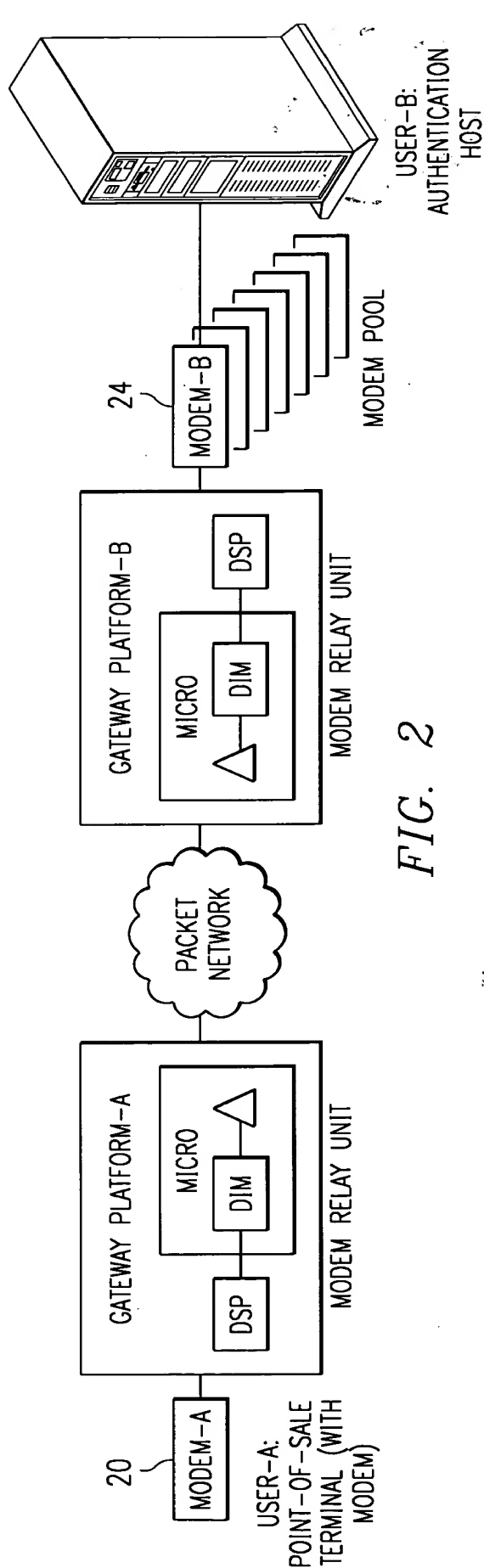


FIG. 2

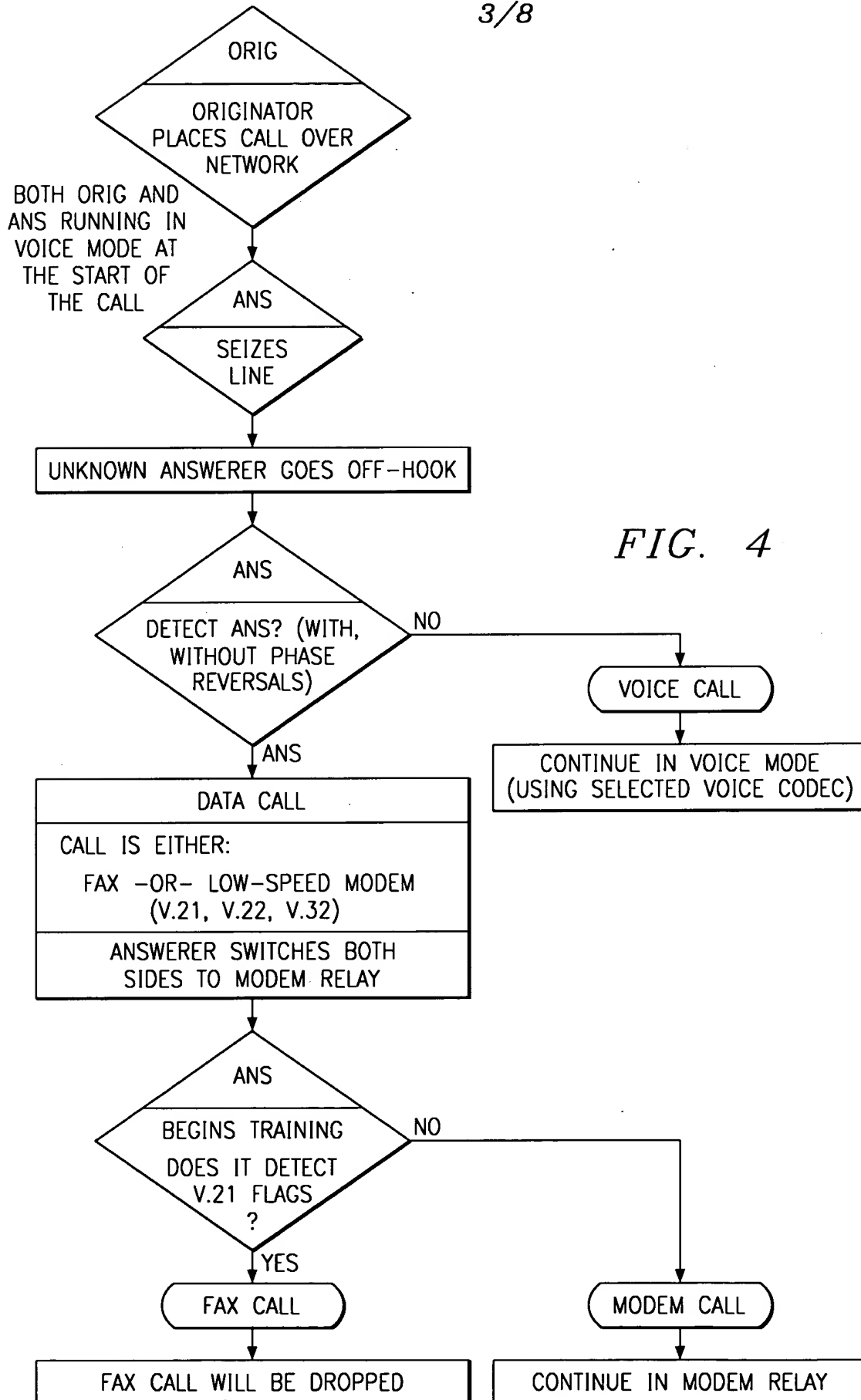
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The diagram illustrates the architecture of a GDM (Global Data Module) system. It is organized into several functional blocks and their interconnections:

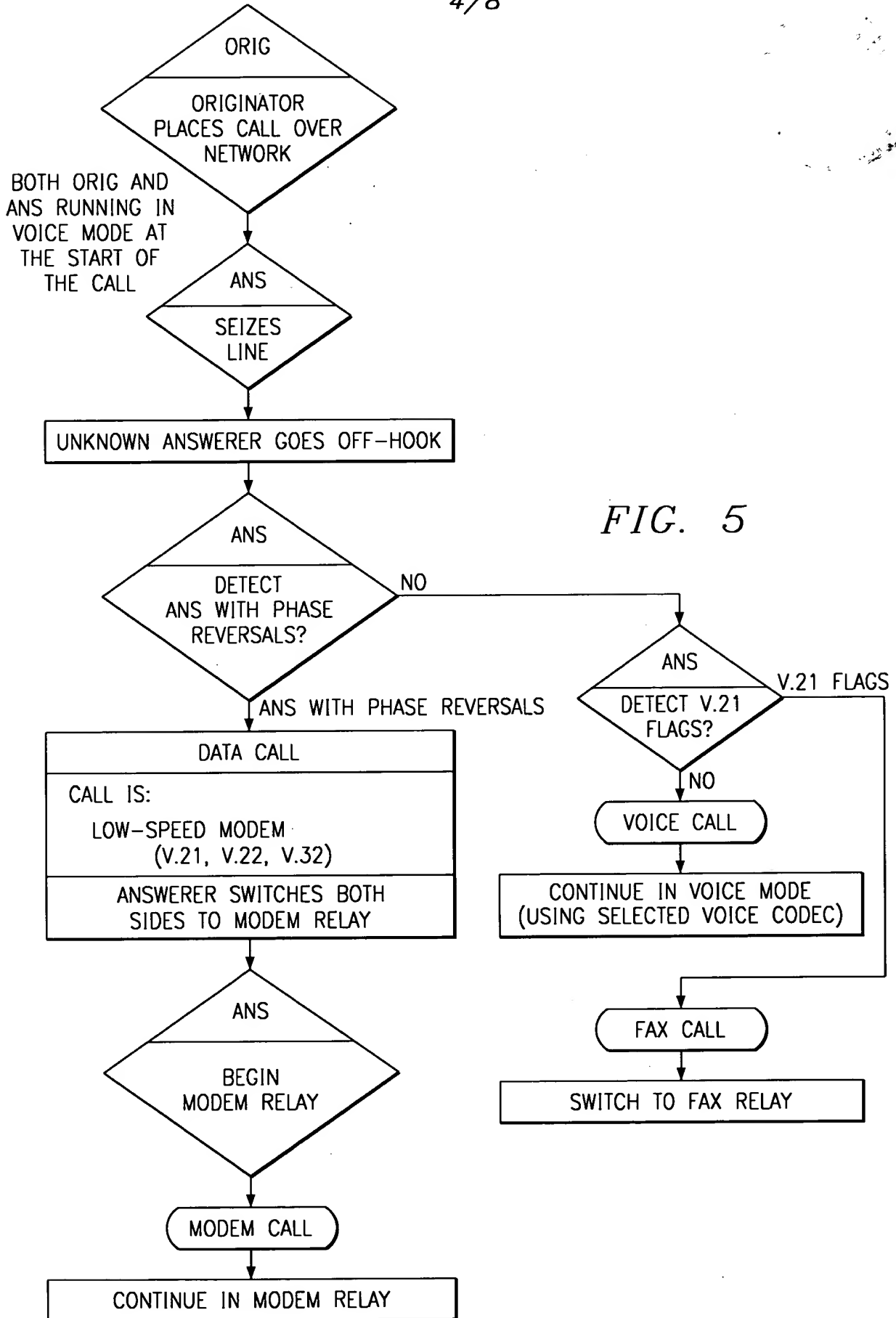
- PCM DRIVER**: The primary input/output interface at the bottom, connected to the **PCM INTERFACE UNIT**.
- PCM INTERFACE UNIT**: Acts as a bridge between the PCM Driver and the internal processing units.
- TX Path (Transmit)**:
  - Signal flows from the PCM Interface Unit through an **ECHO CANCELLER UNIT** and **TX GAIN**.
  - The **CALLER ID DETECT** unit receives input from the TX path and provides output to the **CALLER ID GENERATOR**.
  - The **VOICE ACTIVITY DETECTION UNIT** receives input from the TX path and provides output to the **VOICE CODEC UNIT**.
  - The **VOICE CODEC UNIT** (supporting G.711, G.726, G.727, G.728, G.729B, G.729AB, and G.732.1A) receives input from the TX path and provides output to the **PACKETIZED VOICE PROTOCOL UNIT**.
- RX Path (Receive)**:
  - Signal flows from the **PACKETIZED VOICE PROTOCOL UNIT** through a **VOICE PLAYOUT UNIT** and **RX GAIN**.
  - The **CALLER ID GENERATOR** provides input to the RX path.
  - The **VOICE CODEC UNIT** also receives input from the RX path and provides output to the **PACKETIZED VOICE PROTOCOL UNIT**.
- Control and Management Units**:
  - SOFTWARE INTEGRATION UNIT** and **MESSAGE PROCESSOR UNIT** are connected to the **PACKETIZED VOICE PROTOCOL UNIT** and the **ALL GDM UNITS**.
  - ALL GDM UNITS** is a central hub for communication between the software integration and message processor units.
  - CALLER ID GENERATOR** is connected to the **CALLER ID DETECT** unit and the **VOICE CODEC UNIT**.
  - VOICE CODEC UNIT** is also connected to the **PACKETIZED VOICE PROTOCOL UNIT**.
  - PACKETIZED VOICE PROTOCOL UNIT** is connected to the **VOICE PLAYOUT UNIT** and the **VOICE CODEC UNIT**.
  - VOICE PLAYOUT UNIT** is connected to the **VOICE CODEC UNIT**.
  - VOICE CODEC UNIT** is connected to the **PACKETIZED VOICE PROTOCOL UNIT**.
  - PACKETIZED VOICE PROTOCOL UNIT** is connected to the **VOICE PLAYOUT UNIT**.
  - PACKETIZED VOICE PROTOCOL UNIT** is connected to the **VOICE CODEC UNIT**.
  - PACKETIZED VOICE PROTOCOL UNIT** is connected to the **VOICE CODEC UNIT**.
  - PACKETIZED VOICE PROTOCOL UNIT** is connected to the **VOICE CODEC UNIT**.
- External Interface**: The **HPI** (Host Processor Interface) is connected to the **PACKETIZED VOICE PROTOCOL UNIT** and the **MESSAGE PROCESSOR UNIT**.

FIG. 6

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FIG. 7

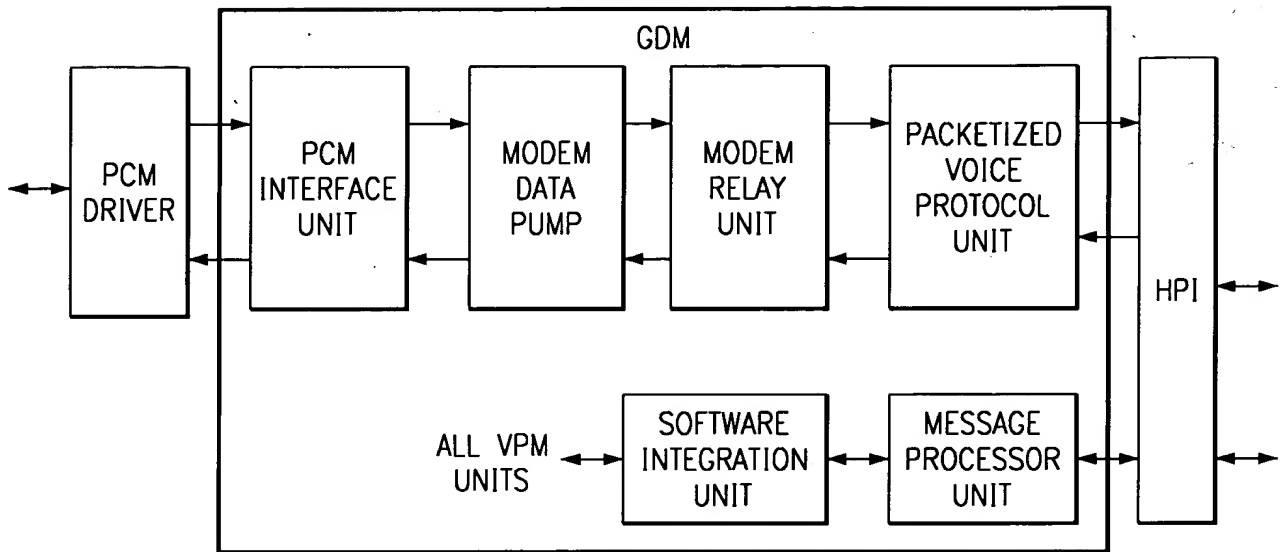
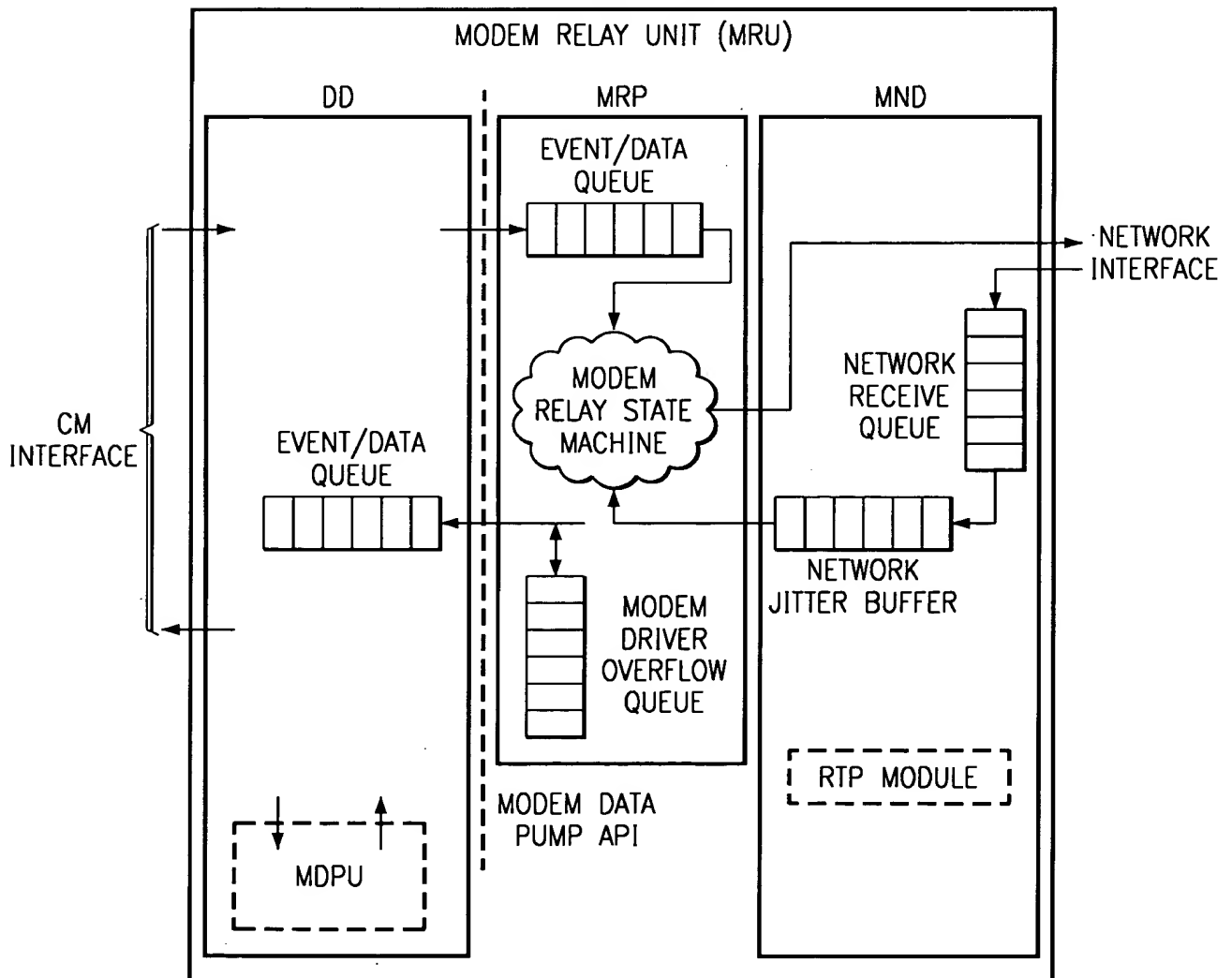


FIG. 8



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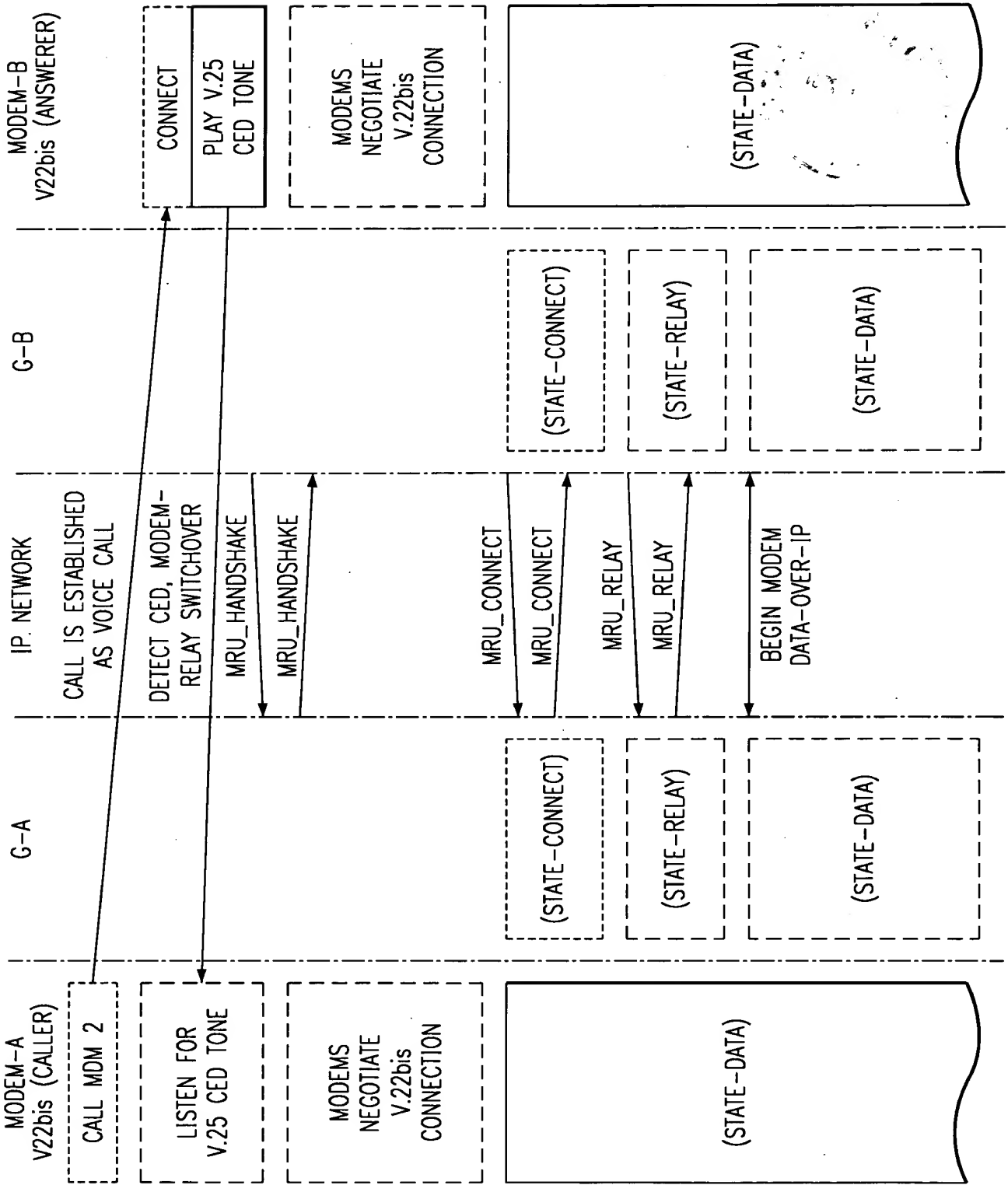
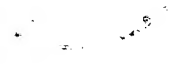


FIG. 9

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[illegible]

BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
DATA PACKET TYPE							
BYTE 0 OF MODEM DATA							
BYTE 1 OF MODEM DATA							
⋮							
BYTE N-1 OF MODEM DATA							



MODEM RELAY PROTOCOL STATE PACKETS

PROTOCOL STATE	DESCRIPTION
OFFLINE	IDLE STATE
CARRIER LOSS	SILENCE ON THE ANALOG LINE, CARRIER LOSS
HANDSHAKE	MODEM DATA PUMPS WILL BEGIN HANDSHAKING PROCESS
CONNECT	LOCAL HANDSHAKE SESSION IS PASSED AND READY FOR MODEM RELAY
RELAY	MODEM RELAY TAKES PLACE

MODEM HANDSHAKE STATE PACKETS

HANDSHAKE STATE	DESCRIPTION
V25	V.25 ANSWER TONE IS DETECTED ON THE LOCAL ANALOG LINE
V25PR	V.25 ANSWER TONE WITH PHASE REVERSALS IS DETECTED ON THE LOCAL ANALOG LINE
V21	V.21 B1 SIGNAL IS DETECTED ON THE LOCAL ANALOG LINE
USB1	V.22 USB1 SIGNAL IS DETECTED ON THE LOCAL ANALOG LINE
S1	V.22bis S1 SIGNAL IS DETECTED ON THE LOCAL ANALOG LINE
SB1_1200	V.22bis SB1 SIGNAL @ 1200 IS DETECTED ON THE LOCAL ANALOG LINE
SB1_2400	V.22bis SB1 SIGNAL @ 2400 IS DETECTED ON THE LOCAL ANALOG LINE

MODEM DATA PACKETS

DATA TYPE	DESCRIPTION
V21	V.21 DATA @ 300 bps
V22	V.22 DATA @ 1200 bps
V22BIS	V.22bis DATA @ 2400bps

FIG. 12